

General-purpose CMOS Logic IC Series (BU4S,BU4000B Series)

# High Voltage CMOS Logic ICs

## <Logic Gate>



BU4001B/F,BU4011B/F/FV,BU4030B/F,BU4070B/F,  
 BU4081B/F/FV,BU4093B/F/FV,BU4069UB/F/FV,BU4584B/F/FV

No.11050EBT03

### ●Description

BU4001B series ICs are 2-input positive logic NOR gates, each with four built-in circuits. A buffer achieved by an inverter added at the gate output improves the input / output propagation characteristics and minimizes variation in the propagation time caused by an increase in the load capacitance. BU4011B series ICs are 2-input positive logic NAND gates. Four circuits are contained on a single chip. An inverter-based buffer is included at the gate output, enabling improved input / output propagation characteristics, and an increased load capacitance minimizes fluctuations in the propagation time.

BU4030B and BU4070B series ICs are exclusive OR gates, each with four built-in circuits. An inverter-based buffer was incorporated at the gate output for enhanced I/O voltage characteristics, and the load capacitance has been increased in order to minimize fluctuations in the propagation time. BU4081B series are 2-input positive logic AND gates with four circuits mounted on a single chip. An inverter-type buffer was added to the gate output, improving input/output transmission speed, and an increased load capacitance suppresses fluctuations in the transmission time. BU4093B series ICs are 4-circuit, 2-input NAND gates whose input pins all have a Schmitt trigger function. BU4069UB series ICs are 6-circuit inverters with no buffers. A single-stage gate configuration reduces propagation time. BU4584B series ICs are inverter-type Schmitt trigger circuits, each incorporating 6 circuits in a single chip.

### ●Features

- 1) Low power consumption
- 2) Broad operating supply voltage range: 3V to 16V
- 3) High input impedance
- 4) High fan out
- 5) L-TTL2 and LS-TTL1 inputs can be directly driven
- 6) All outputs are equipped with buffers (except for BU4069UB)

### ●Applications

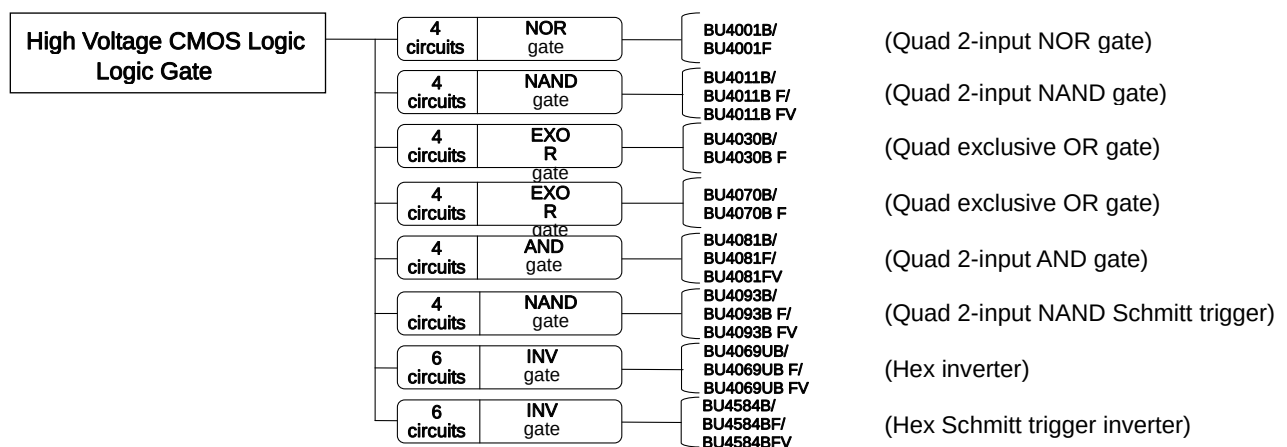
These products are suitable for applications requiring low power consumption and a high degree of noise tolerance

The BU4030B/BU4070B series can be used in digital comparators and parity circuits

The BU4093B series are suitable as line receivers, waveform shaping and multi-vibrators, etc.

The BU4584B series can be used in waveform shaping circuits for inputs with a slow rise time and fall time

### ●Lineup



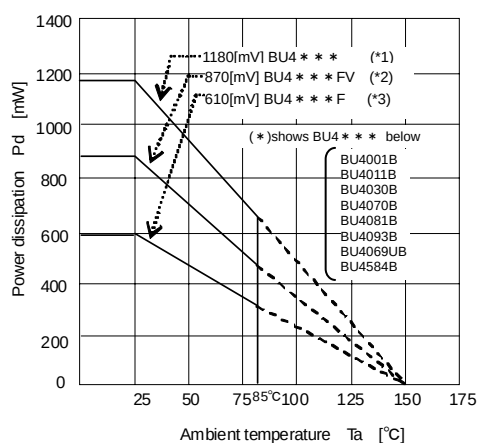
## Absolute Maximum Ratings

| Parameter                    | Symbol | Limit           |         |                     |         |         |          |         | Unit |
|------------------------------|--------|-----------------|---------|---------------------|---------|---------|----------|---------|------|
|                              |        | BU4001B         | BU4011B | BU4030B<br>/BU4070B | BU4081B | BU4093B | BU4069UB | BU4584B |      |
| Power Supply Voltage         | VDD    | -0.3 to 18      |         |                     |         |         |          |         | V    |
| Supply current               | Iin    | ±10             |         |                     |         |         |          |         | mA   |
| Operating temperature        | Topr   | -40 to 85       |         |                     |         |         |          |         | °C   |
| Storage temperature          | Tstg   | -55 to 150      |         |                     |         |         |          |         | °C   |
| Input Voltage                | VIN    | -0.3 to VDD+0.3 |         |                     |         |         |          |         | V    |
| Maximum junction temperature | Tjmax  | 150             |         |                     |         |         |          |         | °C   |

## Recommended Operating Conditions

| Parameter              | Symbol | Limit    |         |                     |         |         |          |         | Unit |
|------------------------|--------|----------|---------|---------------------|---------|---------|----------|---------|------|
|                        |        | BU4001B  | BU4011B | BU4030B<br>/BU4070B | BU4081B | BU4093B | BU4069UB | BU4584B |      |
| Operating Power Supply | VDD    | 3 to 16  |         |                     |         |         |          |         | V    |
| Input Voltage          | VIN    | 0 to VDD |         |                     |         |         |          |         | V    |

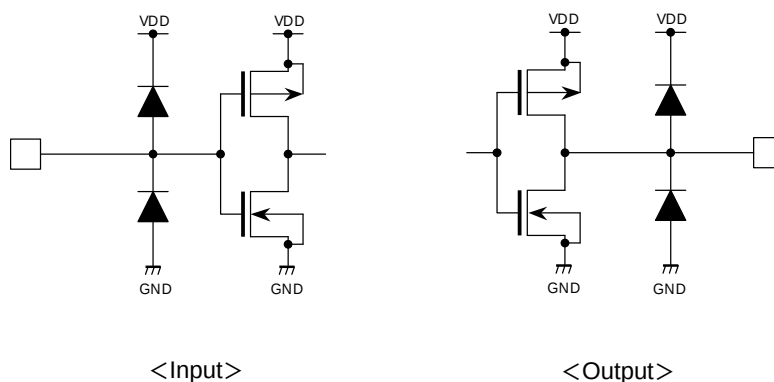
## Thermal Derating Curve



| (*)1 | (*)2 | (*)3 | UNIT  |
|------|------|------|-------|
| 9.5  | 7.0  | 4.9  | mW/°C |

When used at Ta=25[°C] or above, values of above are reduced per 1[°C].  
Allowable loss is the value for mounting 70[mm] x 70[mm] x 1.6[mm] FR4 glass epoxy circuit board (copper foil area is 3% or less).

## Input / Output Equivalent Circuits



## ●Electrical Characteristics(BU4001B)(Unless otherwise noted, VSS=0V, Ta=25°C, CL=50pF)

|                    | Parameter             | Symbol | Standard Value |     |      | Unit | VDD[V] | Condition     | Fig.No |
|--------------------|-----------------------|--------|----------------|-----|------|------|--------|---------------|--------|
|                    |                       |        | MIN            | TYP | MAX  |      |        |               |        |
| DC Characteristics | Input "H" voltage     | VIH    | 3.5            | —   | —    | V    | 5      | —             | 1      |
|                    |                       |        | 7.0            | —   | —    |      | 10     |               | 2      |
|                    |                       |        | 11.0           | —   | —    |      | 15     |               | 3      |
|                    | Input "L" voltage     | VIL    | —              | —   | 1.5  | V    | 5      | —             | 1      |
|                    |                       |        | —              | —   | 3.0  |      | 10     |               | 2      |
|                    |                       |        | —              | —   | 4.0  |      | 15     |               | 3      |
|                    | Input "H" current     | IIH    | —              | —   | 0.3  | μA   | 15     | VIH=15[V]     | —      |
|                    | Input "L" current     | IIL    | —              | —   | -0.3 | μA   | 15     | VIL=0[V]      | —      |
|                    | Output "H" voltage    | VOH    | 4.95           | —   | —    | V    | 5      | IO=0[mA]      | 1      |
|                    |                       |        | 9.95           | —   | —    |      | 10     |               | 2      |
|                    |                       |        | 14.95          | —   | —    |      | 15     |               | 3      |
|                    | Output "L" voltage    | VOL    | —              | —   | 0.05 | V    | 5      | IO=0[mA]      | 1      |
|                    |                       |        | —              | —   | 0.05 |      | 10     |               | 2      |
|                    |                       |        | —              | —   | 0.05 |      | 15     |               | 3      |
|                    | Output "H" current    | IOH    | -0.16          | —   | —    | mA   | 5      | VOH=4.6[V]    | 4      |
|                    |                       |        | -0.4           | —   | —    |      | 10     | VOH=9.5[V]    |        |
|                    |                       |        | -1.2           | —   | —    |      | 15     | VOH=13.5[V]   |        |
|                    | Output "L" current    | IOL    | 0.44           | —   | —    | mA   | 5      | VOL=0.4[V]    | 5      |
|                    |                       |        | 1.1            | —   | —    |      | 10     | VOL=0.5[V]    |        |
|                    |                       |        | 3.0            | —   | —    |      | 15     | VOL=1.5[V]    |        |
|                    | Static supply current | IDD    | —              | —   | 1    | μA   | 5      | VI=VDD or GND | —      |
|                    |                       |        | —              | —   | 2    |      | 10     |               |        |
|                    |                       |        | —              | —   | 4    |      | 15     |               |        |

|                           | Parameter                            | Symbol | Standard Value |     |     | Unit | VDD[V] | Condition | Fig.No |
|---------------------------|--------------------------------------|--------|----------------|-----|-----|------|--------|-----------|--------|
|                           |                                      |        | MIN            | TYP | MAX |      |        |           |        |
| Switching Characteristics | Output rising time                   | tTLH   | —              | 180 | —   | ns   | 5      | —         | 6      |
|                           |                                      |        | —              | 90  | —   |      | 10     |           |        |
|                           |                                      |        | —              | 65  | —   |      | 15     |           |        |
|                           | Output falling time                  | tTHL   | —              | 100 | —   | ns   | 5      | —         | 7      |
|                           |                                      |        | —              | 50  | —   |      | 10     |           |        |
|                           |                                      |        | —              | 40  | —   |      | 15     |           |        |
|                           | "L" to "H"<br>Propagation delay time | tPLH   | —              | 90  | —   | ns   | 5      | —         | 8      |
|                           |                                      |        | —              | 50  | —   |      | 10     |           |        |
|                           |                                      |        | —              | 40  | —   |      | 15     |           |        |
|                           | "H" to "L"<br>Propagation delay time | tPHL   | —              | 90  | —   | ns   | 5      | —         | 9      |
|                           |                                      |        | —              | 50  | —   |      | 10     |           |        |
|                           |                                      |        | —              | 40  | —   |      | 15     |           |        |
|                           | Input capacitance                    | CIN    | —              | 5   | —   | pF   | —      | —         | —      |

## ●Electrical Characteristics(BU4011B)(Unless otherwise noted, VSS=0V, Ta=25°C, CL=50pF)

|                    | Parameter             | Symbol | Standard Value |     |      | Unit | VDD[V] | Condition     | Fig.No |
|--------------------|-----------------------|--------|----------------|-----|------|------|--------|---------------|--------|
|                    |                       |        | MIN            | TYP | MAX  |      |        |               |        |
| DC Characteristics | Input "H" voltage     | VIH    | 3.5            | —   | —    | V    | 5      | —             | 10     |
|                    |                       |        | 7.0            | —   | —    |      | 10     |               | 11     |
|                    |                       |        | 11.0           | —   | —    |      | 15     |               | 12     |
|                    | Input "L" voltage     | VIL    | —              | —   | 1.5  | V    | 5      | —             | 10     |
|                    |                       |        | —              | —   | 3.0  |      | 10     |               | 11     |
|                    |                       |        | —              | —   | 4.0  |      | 15     |               | 12     |
|                    | Input "H" current     | IIH    | —              | —   | 0.3  | μA   | 15     | VIH=15[V]     | —      |
|                    | Input "L" current     | IIL    | —              | —   | -0.3 | μA   | 15     | VIL=0[V]      | —      |
|                    | Output "H" voltage    | VOH    | 4.95           | —   | —    | V    | 5      | IO=0[mA]      | 10     |
|                    |                       |        | 9.95           | —   | —    |      | 10     |               | 11     |
|                    |                       |        | 14.95          | —   | —    |      | 15     |               | 12     |
|                    | Output "L" voltage    | VOL    | —              | —   | 0.05 | V    | 5      | IO=0[mA]      | 10     |
|                    |                       |        | —              | —   | 0.05 |      | 10     |               | 11     |
|                    |                       |        | —              | —   | 0.05 |      | 15     |               | 12     |
|                    | Output "H" current    | IOH    | -0.16          | —   | —    | mA   | 5      | VOH=4.6[V]    | 13     |
|                    |                       |        | -0.4           | —   | —    |      | 10     | VOH=9.5[V]    |        |
|                    |                       |        | -1.2           | —   | —    |      | 15     | VOH=13.5[V]   |        |
|                    | Output "L" current    | IOL    | 0.44           | —   | —    | mA   | 5      | VOL=0.4[V]    | 14     |
|                    |                       |        | 1.1            | —   | —    |      | 10     | VOL=0.5[V]    |        |
|                    |                       |        | 3.0            | —   | —    |      | 15     | VOL=1.5[V]    |        |
|                    | Static supply current | IDD    | —              | —   | 1    | μA   | 5      | VI=VDD or GND | —      |
|                    |                       |        | —              | —   | 2    |      | 10     |               |        |
|                    |                       |        | —              | —   | 4    |      | 15     |               |        |

|                           | Parameter                            | Symbol | Standard Value |     |     | Unit | VDD[V] | Condition | Fig.No |
|---------------------------|--------------------------------------|--------|----------------|-----|-----|------|--------|-----------|--------|
|                           |                                      |        | MIN            | TYP | MAX |      |        |           |        |
| Switching Characteristics | Output rising time                   | tTLH   | —              | 180 | —   | ns   | 5      | —         | 15     |
|                           |                                      |        | —              | 90  | —   |      | 10     |           |        |
|                           |                                      |        | —              | 65  | —   |      | 15     |           |        |
|                           | Output falling time                  | tTHL   | —              | 100 | —   | ns   | 5      | —         | 16     |
|                           |                                      |        | —              | 50  | —   |      | 10     |           |        |
|                           |                                      |        | —              | 40  | —   |      | 15     |           |        |
|                           | "L" to "H"<br>Propagation delay time | tPLH   | —              | 90  | —   | ns   | 5      | —         | 17     |
|                           |                                      |        | —              | 50  | —   |      | 10     |           |        |
|                           |                                      |        | —              | 40  | —   |      | 15     |           |        |
|                           | "H" to "L"<br>Propagation delay time | tPHL   | —              | 90  | —   | ns   | 5      | —         | 18     |
|                           |                                      |        | —              | 50  | —   |      | 10     |           |        |
|                           |                                      |        | —              | 40  | —   |      | 15     |           |        |
|                           | Input capacitance                    | CIN    | —              | 5   | —   | pF   | —      | —         | —      |

## ● Electrical Characteristics (BU4030B/ BU4070B) (Unless otherwise noted, VSS=0V, Ta=25°C, CL=50pF)

|                    | Parameter             | Symbol | Standard Value |     |      | Unit | VDD[V] | Condition     | Fig.No |
|--------------------|-----------------------|--------|----------------|-----|------|------|--------|---------------|--------|
|                    |                       |        | MIN            | TYP | MAX  |      |        |               |        |
| DC Characteristics | Input "H" voltage     | VIH    | 3.5            | —   | —    | V    | 5      | —             | 19     |
|                    |                       |        | 7.0            | —   | —    |      | 10     |               | 20     |
|                    |                       |        | 11.0           | —   | —    |      | 15     |               | 21     |
|                    | Input "L" voltage     | VIL    | —              | —   | 1.5  | V    | 5      | —             | 19     |
|                    |                       |        | —              | —   | 3.0  |      | 10     |               | 20     |
|                    |                       |        | —              | —   | 4.0  |      | 15     |               | 21     |
|                    | Input "H" current     | IIH    | —              | —   | 0.3  | μA   | 15     | VIH=15[V]     | —      |
|                    | Input "L" current     | IIL    | —              | —   | -0.3 | μA   | 15     | VIL=0[V]      | —      |
|                    | Output "H" voltage    | VOH    | 4.95           | —   | —    | V    | 5      | IO=0[mA]      | 19     |
|                    |                       |        | 9.95           | —   | —    |      | 10     |               | 20     |
|                    |                       |        | 14.95          | —   | —    |      | 15     |               | 21     |
|                    | Output "L" voltage    | VOL    | —              | —   | 0.05 | V    | 5      | IO=0[mA]      | 19     |
|                    |                       |        | —              | —   | 0.05 |      | 10     |               | 20     |
|                    |                       |        | —              | —   | 0.05 |      | 15     |               | 21     |
|                    | Output "H" current    | IOH    | -0.16          | —   | —    | mA   | 5      | VOH=4.6[V]    | 22     |
|                    |                       |        | -0.4           | —   | —    |      | 10     | VOH=9.5[V]    |        |
|                    |                       |        | -1.2           | —   | —    |      | 15     | VOH=13.5[V]   |        |
|                    | Output "L" current    | IOL    | 0.44           | —   | —    | mA   | 5      | VOL=0.4[V]    | 23     |
|                    |                       |        | 1.1            | —   | —    |      | 10     | VOL=0.5[V]    |        |
|                    |                       |        | 3.0            | —   | —    |      | 15     | VOL=1.5[V]    |        |
|                    | Static supply current | IDD    | —              | —   | 1    | μA   | 5      | VI=VDD or GND | —      |
|                    |                       |        | —              | —   | 2    |      | 10     |               |        |
|                    |                       |        | —              | —   | 4    |      | 15     |               |        |

|                           | Parameter                            | Symbol | Standard Value |     |     | Unit | VDD[V] | Condition | Fig.No |
|---------------------------|--------------------------------------|--------|----------------|-----|-----|------|--------|-----------|--------|
|                           |                                      |        | MIN            | TYP | MAX |      |        |           |        |
| Switching Characteristics | Output rising time                   | tTLH   | —              | 180 | —   | ns   | 5      | —         | 24     |
|                           |                                      |        | —              | 90  | —   |      | 10     |           |        |
|                           |                                      |        | —              | 65  | —   |      | 15     |           |        |
|                           | Output falling time                  | tTHL   | —              | 100 | —   | ns   | 5      | —         | 25     |
|                           |                                      |        | —              | 50  | —   |      | 10     |           |        |
|                           |                                      |        | —              | 40  | —   |      | 15     |           |        |
|                           | "L" to "H"<br>Propagation delay time | tPLH   | —              | 90  | —   | ns   | 5      | —         | 26     |
|                           |                                      |        | —              | 50  | —   |      | 10     |           |        |
|                           |                                      |        | —              | 40  | —   |      | 15     |           |        |
|                           | "H" to "L"<br>Propagation delay time | tPHL   | —              | 90  | —   | ns   | 5      | —         | 27     |
|                           |                                      |        | —              | 50  | —   |      | 10     |           |        |
|                           |                                      |        | —              | 40  | —   |      | 15     |           |        |
|                           | Input capacitance                    | CIN    | —              | 5   | —   | pF   | —      | —         | —      |

●Electrical Characteristics(BU4081B)(Unless otherwise noted, VSS=0V, Ta=25°C, CL=50pF)

|                    | Parameter             | Symbol | Standard Value |     |      | Unit | VDD[V] | Condition     | Fig.No |
|--------------------|-----------------------|--------|----------------|-----|------|------|--------|---------------|--------|
|                    |                       |        | MIN            | TYP | MAX  |      |        |               |        |
| DC Characteristics | Input "H" voltage     | VIH    | 3.5            | —   | —    | V    | 5      | —             | 28     |
|                    |                       |        | 7.0            | —   | —    |      | 10     |               | 29     |
|                    |                       |        | 11.0           | —   | —    |      | 15     |               | 30     |
|                    | Input "L" voltage     | VIL    | —              | —   | 1.5  | V    | 5      | —             | 28     |
|                    |                       |        | —              | —   | 3.0  |      | 10     |               | 29     |
|                    |                       |        | —              | —   | 4.0  |      | 15     |               | 30     |
|                    | Input "H" current     | IIH    | —              | —   | 0.3  | μA   | 15     | VIH=15[V]     | —      |
|                    | Input "L" current     | IIL    | —              | —   | -0.3 | μA   | 15     | VIL=0[V]      | —      |
|                    | Output "H" voltage    | VOH    | 4.95           | —   | —    | V    | 5      | IO=0[mA]      | 28     |
|                    |                       |        | 9.95           | —   | —    |      | 10     |               | 29     |
|                    |                       |        | 14.95          | —   | —    |      | 15     |               | 30     |
|                    | Output "L" voltage    | VOL    | —              | —   | 0.05 | V    | 5      | IO=0[mA]      | 28     |
|                    |                       |        | —              | —   | 0.05 |      | 10     |               | 29     |
|                    |                       |        | —              | —   | 0.05 |      | 15     |               | 30     |
|                    | Output "H" current    | IOH    | -0.16          | —   | —    | mA   | 5      | VOH=4.6[V]    | 31     |
|                    |                       |        | -0.4           | —   | —    |      | 10     | VOH=9.5[V]    |        |
|                    |                       |        | -1.2           | —   | —    |      | 15     | VOH=13.5[V]   |        |
|                    | Output "L" current    | IOL    | 0.44           | —   | —    | mA   | 5      | VOL=0.4[V]    | 32     |
|                    |                       |        | 1.1            | —   | —    |      | 10     | VOL=0.5[V]    |        |
|                    |                       |        | 3.0            | —   | —    |      | 15     | VOL=1.5[V]    |        |
|                    | Static supply current | IDD    | —              | —   | 1    | μA   | 5      | VI=VDD or GND | —      |
|                    |                       |        | —              | —   | 2    |      | 10     |               |        |
|                    |                       |        | —              | —   | 4    |      | 15     |               |        |

|                           | Parameter                            | Symbol | Standard Value |     |     | Unit | VDD[V] | Condition | Fig.No |
|---------------------------|--------------------------------------|--------|----------------|-----|-----|------|--------|-----------|--------|
|                           |                                      |        | MIN            | TYP | MAX |      |        |           |        |
| Switching Characteristics | Output rising time                   | tTLH   | —              | 180 | —   | ns   | 5      | —         | 33     |
|                           |                                      |        | —              | 90  | —   |      | 10     |           |        |
|                           |                                      |        | —              | 65  | —   |      | 15     |           |        |
|                           | Output falling time                  | tTHL   | —              | 100 | —   | ns   | 5      | —         | 34     |
|                           |                                      |        | —              | 50  | —   |      | 10     |           |        |
|                           |                                      |        | —              | 40  | —   |      | 15     |           |        |
|                           | "L" to "H"<br>Propagation delay time | tPLH   | —              | 160 | —   | ns   | 5      | —         | 35     |
|                           |                                      |        | —              | 65  | —   |      | 10     |           |        |
|                           |                                      |        | —              | 50  | —   |      | 15     |           |        |
|                           | "H" to "L"<br>Propagation delay time | tPHL   | —              | 160 | —   | ns   | 5      | —         | 36     |
|                           |                                      |        | —              | 65  | —   |      | 10     |           |        |
|                           |                                      |        | —              | 50  | —   |      | 15     |           |        |
|                           | Input capacitance                    | CIN    | —              | 5   | —   | pF   | —      | —         | —      |

## ●Electrical Characteristics(BU4093B)(Unless otherwise noted, VSS=0V, Ta=25°C, CL=50pF)

|                    | Parameter             | Symbol          | Standard Value |     |      | Unit | VDD[V] | Condition     | Fig.No |
|--------------------|-----------------------|-----------------|----------------|-----|------|------|--------|---------------|--------|
|                    |                       |                 | MIN            | TYP | MAX  |      |        |               |        |
| DC Characteristics | Input "H" voltage     | VIH             | 3.5            | —   | —    | V    | 5      | —             | 37     |
|                    |                       |                 | 7.0            | —   | —    |      | 10     |               | 38     |
|                    |                       |                 | 11.0           | —   | —    |      | 15     |               | 39     |
|                    | Input "L" voltage     | VIL             | —              | —   | 1.5  | V    | 5      | —             | 37     |
|                    |                       |                 | —              | —   | 3.0  |      | 10     |               | 38     |
|                    |                       |                 | —              | —   | 4.0  |      | 15     |               | 39     |
|                    | Input "H" current     | I <sub>IH</sub> | —              | —   | 0.3  | μA   | 15     | VIH=15[V]     | —      |
|                    | Input "L" current     | I <sub>IL</sub> | —              | —   | -0.3 | μA   | 15     | VIL=0[V]      | —      |
|                    | Output "H" voltage    | VOH             | 4.95           | —   | —    | V    | 5      | IO=0[mA]      | 37     |
|                    |                       |                 | 9.95           | —   | —    |      | 10     |               | 38     |
|                    |                       |                 | 14.95          | —   | —    |      | 15     |               | 39     |
|                    | Output "L" voltage    | VOL             | —              | —   | 0.05 | V    | 5      | IO=0[mA]      | 37     |
|                    |                       |                 | —              | —   | 0.05 |      | 10     |               | 38     |
|                    |                       |                 | —              | —   | 0.05 |      | 15     |               | 39     |
|                    | Output "H" current    | IOH             | -0.44          | —   | —    | mA   | 5      | VOH=4.6[V]    | 40     |
|                    |                       |                 | -1.1           | —   | —    |      | 10     | VOH=9.5[V]    |        |
|                    |                       |                 | -3.0           | —   | —    |      | 15     | VOH=13.5[V]   |        |
|                    | Output "L" current    | IOL             | 0.44           | —   | —    | mA   | 5      | VOL=0.4[V]    | 41     |
|                    |                       |                 | 1.1            | —   | —    |      | 10     | VOL=0.5[V]    |        |
|                    |                       |                 | 3.0            | —   | —    |      | 15     | VOL=1.5[V]    |        |
|                    | Static supply current | IDD             | —              | —   | 1    | μA   | 5      | VI=VDD or GND | —      |
|                    |                       |                 | —              | —   | 2    |      | 10     |               |        |
|                    |                       |                 | —              | —   | 4    |      | 15     |               |        |
|                    | Hysteresis voltage    | VH              | 0.17           | —   | 0.39 | μA   | 5      | —             | —      |
|                    |                       |                 | 0.25           | —   | 0.60 |      | 10     |               |        |
|                    |                       |                 | 0.33           | —   | 0.90 |      | 15     |               |        |

|                           | Parameter                            | Symbol           | Standard Value |     |     | Unit | VDD[V] | Condition | Fig.No |
|---------------------------|--------------------------------------|------------------|----------------|-----|-----|------|--------|-----------|--------|
|                           |                                      |                  | MIN            | TYP | MAX |      |        |           |        |
| Switching Characteristics | Output rising time                   | t <sub>TLH</sub> | —              | 100 | —   | ns   | 5      | —         | 42     |
|                           |                                      |                  | —              | 50  | —   |      | 10     |           |        |
|                           |                                      |                  | —              | 40  | —   |      | 15     |           |        |
|                           | Output falling time                  | t <sub>THL</sub> | —              | 100 | —   | ns   | 5      | —         | 43     |
|                           |                                      |                  | —              | 50  | —   |      | 10     |           |        |
|                           |                                      |                  | —              | 40  | —   |      | 15     |           |        |
|                           | "L" to "H"<br>Propagation delay time | t <sub>PLH</sub> | —              | 125 | —   | ns   | 5      | —         | 44     |
|                           |                                      |                  | —              | 50  | —   |      | 10     |           |        |
|                           |                                      |                  | —              | 40  | —   |      | 15     |           |        |
|                           | "H" to "L"<br>Propagation delay time | t <sub>PHL</sub> | —              | 125 | —   | ns   | 5      | —         | 45     |
|                           |                                      |                  | —              | 50  | —   |      | 10     |           |        |
|                           |                                      |                  | —              | 40  | —   |      | 15     |           |        |
|                           | Input capacitance                    | C <sub>IN</sub>  | —              | 5   | —   | pF   | —      | —         | —      |

## ●Electrical Characteristics(BU4069UB)(Unless otherwise noted, VSS=0V, Ta=25°C, CL=50pF)

|                    | Parameter             | Symbol | Standard Value |     |      | Unit | VDD[V] | Condition     | Fig.No |
|--------------------|-----------------------|--------|----------------|-----|------|------|--------|---------------|--------|
|                    |                       |        | MIN            | TYP | MAX  |      |        |               |        |
| DC Characteristics | Input "H" voltage     | VIH    | 4.0            |     | —    | V    | 5      | —             | 46     |
|                    |                       |        | 8.0            |     | —    |      | 10     |               | 47     |
|                    |                       |        | 12.5           |     | —    |      | 15     |               | 48     |
|                    | Input "L" voltage     | VIL    | —              | —   | 1.0  | V    | 5      | —             | 46     |
|                    |                       |        | —              | —   | 2.0  |      | 10     |               | 47     |
|                    |                       |        | —              | —   | 2.5  |      | 15     |               | 48     |
|                    | Input "H" current     | IIH    | —              | —   | 0.3  | μA   | 15     | VIH=15[V]     | —      |
|                    | Input "L" current     | IIL    | —              | —   | -0.3 | μA   | 15     | VIL=0[V]      | —      |
|                    | Output "H" voltage    | VOH    | 4.95           | —   | —    | V    | 5      | IO=0[mA]      | 46     |
|                    |                       |        | 9.95           | —   | —    |      | 10     |               | 47     |
|                    |                       |        | 14.95          | —   | —    |      | 15     |               | 48     |
|                    | Output "L" voltage    | VOL    | —              | —   | 0.05 | V    | 5      | IO=0[mA]      | 46     |
|                    |                       |        | —              | —   | 0.05 |      | 10     |               | 47     |
|                    |                       |        | —              | —   | 0.05 |      | 15     |               | 48     |
|                    | Output "H" current    | IOH    | -0.44          | —   | —    | mA   | 5      | VOH=4.6[V]    | 49     |
|                    |                       |        | -1.1           | —   | —    |      | 10     | VOH=9.5[V]    |        |
|                    |                       |        | -3.0           | —   | —    |      | 15     | VOH=13.5[V]   |        |
|                    | Output "L" current    | IOL    | 0.44           | —   | —    | mA   | 5      | VOL=0.4[V]    | 50     |
|                    |                       |        | 1.1            | —   | —    |      | 10     | VOL=0.5[V]    |        |
|                    |                       |        | 3.0            | —   | —    |      | 15     | VOL=1.5[V]    |        |
|                    | Static supply current | IDD    | —              | —   | 1    | μA   | 5      | VI=VDD or GND | —      |
|                    |                       |        | —              | —   | 2    |      | 10     |               |        |
|                    |                       |        | —              | —   | 4    |      | 15     |               |        |

|                           | Parameter                            | Symbol | Standard Value |     |     | Unit | VDD[V] | Condition | Fig.No |
|---------------------------|--------------------------------------|--------|----------------|-----|-----|------|--------|-----------|--------|
|                           |                                      |        | MIN            | TYP | MAX |      |        |           |        |
| Switching Characteristics | Output rising time                   | tTLH   | —              | 180 | —   | ns   | 5      | —         | 51     |
|                           |                                      |        | —              | 90  | —   |      | 10     |           |        |
|                           |                                      |        | —              | 65  | —   |      | 15     |           |        |
|                           | Output falling time                  | tTHL   | —              | 100 | —   | ns   | 5      | —         | 52     |
|                           |                                      |        | —              | 50  | —   |      | 10     |           |        |
|                           |                                      |        | —              | 40  | —   |      | 15     |           |        |
|                           | "L" to "H"<br>Propagation delay time | tPLH   | —              | 90  | —   | ns   | 5      | —         | 53     |
|                           |                                      |        | —              | 50  | —   |      | 10     |           |        |
|                           |                                      |        | —              | 40  | —   |      | 15     |           |        |
|                           | "H" to "L"<br>Propagation delay time | tPHL   | —              | 65  | —   | ns   | 5      | —         | 54     |
|                           |                                      |        | —              | 40  | —   |      | 10     |           |        |
|                           |                                      |        | —              | 30  | —   |      | 15     |           |        |
|                           | Input capacitance                    | CIN    | —              | 5   | —   | pF   | —      | —         | —      |

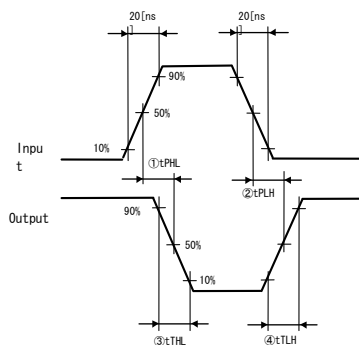


●Electrical Characteristics(BU4584B)(Unless otherwise noted, VSS=0V, Ta=25°C, CL=50pF)

|                    | Parameter             | Symbol          | Standard Value |     |      | Unit | VDD[V] | Condition   | Fig.No |
|--------------------|-----------------------|-----------------|----------------|-----|------|------|--------|-------------|--------|
|                    |                       |                 | MIN            | TYP | MAX  |      |        |             |        |
| DC Characteristics | Input "H" voltage     | VIH             | 3.5            | —   | —    | V    | 5      | —           | 55     |
|                    |                       |                 | 7.0            | —   | —    |      | 10     |             | 56     |
|                    |                       |                 | 11.0           | —   | —    |      | 15     |             | 57     |
|                    | Input "L" voltage     | VIL             | —              | —   | 1.5  | V    | 5      | —           | 55     |
|                    |                       |                 | —              | —   | 3.0  |      | 10     |             | 56     |
|                    |                       |                 | —              | —   | 4.0  |      | 15     |             | 57     |
|                    | Input "H" current     | I <sub>IH</sub> | —              | —   | 0.3  | μA   | 15     | VIH=15[V]   | —      |
|                    | Input "L" current     | I <sub>IL</sub> | —              | —   | -0.3 | μA   | 15     | VIL=0[V]    | —      |
|                    | Output "H" voltage    | VOH             | 4.95           | —   | —    | V    | 5      | IO=0[mA]    | 55     |
|                    |                       |                 | 9.95           | —   | —    |      | 10     |             | 56     |
|                    |                       |                 | 14.95          | —   | —    |      | 15     |             | 57     |
|                    | Output "L" voltage    | VOL             | —              | —   | 0.05 | V    | 5      | IO=0[mA]    | 55     |
|                    |                       |                 | —              | —   | 0.05 |      | 10     |             | 56     |
|                    |                       |                 | —              | —   | 0.05 |      | 15     |             | 57     |
|                    | Output "H" current    | IOH             | -0.44          | —   | —    | mA   | 5      | VOH=4.6[V]  | 58     |
|                    |                       |                 | -1.1           | —   | —    |      | 10     | VOH=9.5[V]  |        |
|                    |                       |                 | -3.0           | —   | —    |      | 15     | VOH=13.5[V] |        |
|                    | Output "L" current    | IOL             | 0.44           | —   | —    | mA   | 5      | VOL=0.4[V]  | 59     |
|                    |                       |                 | 1.1            | —   | —    |      | 10     | VOL=0.5[V]  |        |
|                    |                       |                 | 3.0            | —   | —    |      | 15     | VOL=1.5[V]  |        |
|                    | Static supply current | IDD             | —              | —   | 1    | μA   | 5      | —           | —      |
|                    |                       |                 | —              | —   | 2    |      | 10     |             |        |
|                    |                       |                 | —              | —   | 4    |      | 15     |             |        |
|                    | Hysteresis voltage    | VH              | 0.15           | —   | 0.6  | μA   | 5      | —           | —      |
|                    |                       |                 | 0.25           | —   | 1.0  |      | 10     |             |        |
|                    |                       |                 | 0.40           | —   | 1.5  |      | 15     |             |        |
|                    | Input capacitance     | CIN             | —              | 5   | —    | pF   | —      | —           | —      |

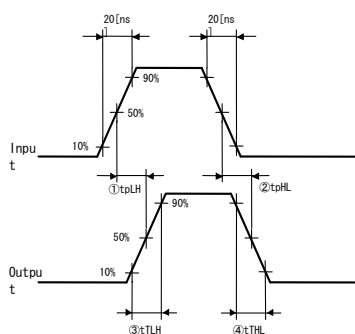
|                           | Parameter                         | Symbol           | Standard Value |     |     | Unit | VDD[V] | Condition | Fig.No |
|---------------------------|-----------------------------------|------------------|----------------|-----|-----|------|--------|-----------|--------|
|                           |                                   |                  | MIN            | TYP | MAX |      |        |           |        |
| Switching Characteristics | Output rising time                | t <sub>TLH</sub> | —              | 100 | —   | ns   | 5      | —         | 60     |
|                           |                                   |                  | —              | 50  | —   |      | 10     |           |        |
|                           |                                   |                  | —              | 40  | —   |      | 15     |           |        |
|                           | Output falling time               | t <sub>THL</sub> | —              | 100 | —   | ns   | 5      | —         | 61     |
|                           |                                   |                  | —              | 50  | —   |      | 10     |           |        |
|                           |                                   |                  | —              | 40  | —   |      | 15     |           |        |
|                           | "L" to "H" Propagation delay time | t <sub>PLH</sub> | —              | 125 | —   | ns   | 5      | —         | 62     |
|                           |                                   |                  | —              | 60  | —   |      | 10     |           |        |
|                           |                                   |                  | —              | 50  | —   |      | 15     |           |        |
|                           | "H" to "L" Propagation delay time | t <sub>PHL</sub> | —              | 125 | —   | ns   | 5      | —         | 63     |
|                           |                                   |                  | —              | 60  | —   |      | 10     |           |        |
|                           |                                   |                  | —              | 50  | —   |      | 15     |           |        |

## ● Switching Characteristics



### Description of Symbols

- (1) tPHL: Time up to 50% of rise time of input waveform  
~ 50% of fall time of output waveform
- (2) tPLH: Time up to 50% of fall time of input waveform  
~ 50% of rise time of output waveform
- (3) tTHL: Time up to 90% ~ 10% of fall time of output waveform
- (4) tTLH: Time up to 10% ~ 90% of rise time of output waveform



### Description of Symbols

- (1) tPLH: Time up to 50% of rise time of input waveform  
~ 50% of rise time of output waveform
- (2) tPHL: Time up to 50% of fall time of input waveform  
~ 50% of fall time of output waveform
- (3) tTLH: Time up to 10% ~ 90% of rise time of output waveform
- (4) tTHL: Time up to 90% ~ 10% of fall time of output waveform

●Electrical Characteristics Curves(BU4001B)

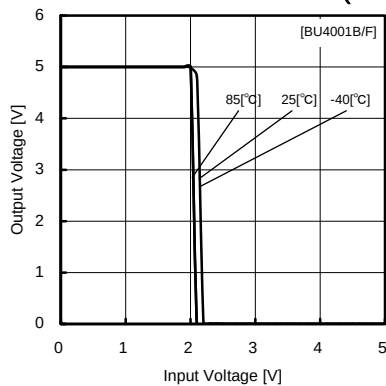


Fig.1  
Output voltage—Input voltage characteristics  
(VDD=5[V] / VSS=0[V])

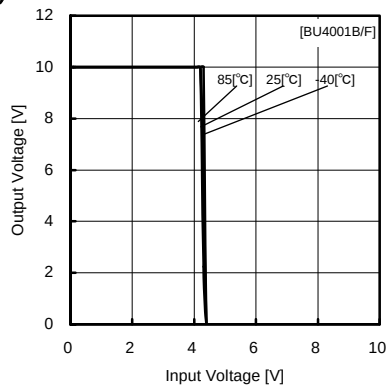


Fig.2  
Output voltage—Input voltage characteristics  
(VDD=10[V] / VSS=0[V])

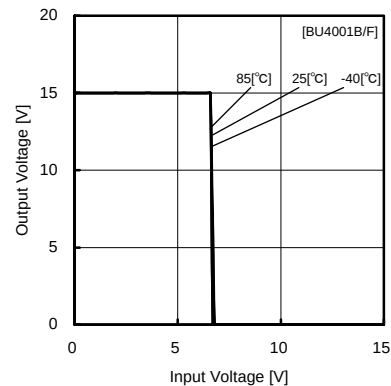


Fig.3  
Output voltage—Input voltage characteristics  
(VDD=15[V] / VSS=0[V])

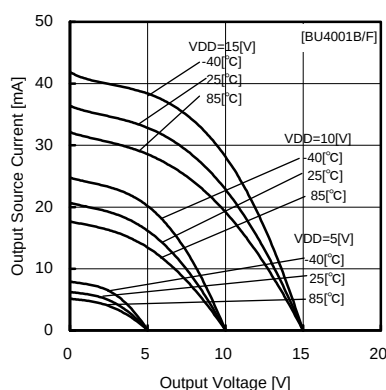


Fig.4  
Output source current—voltage characteristics

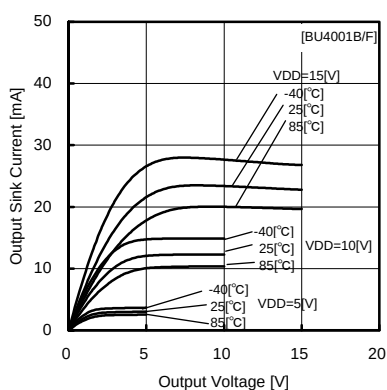


Fig.5  
Output sink current—voltage characteristics

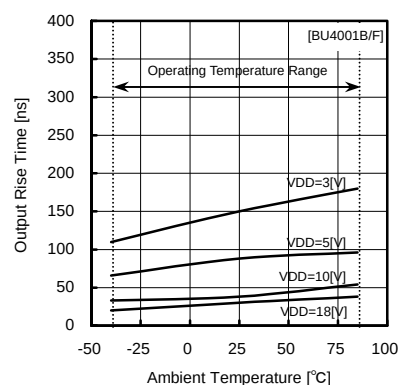


Fig.6  
Rising time tRLH

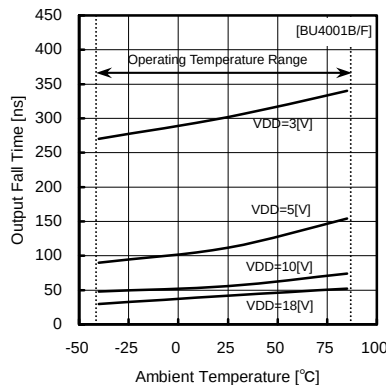


Fig.7  
Falling time tFHL

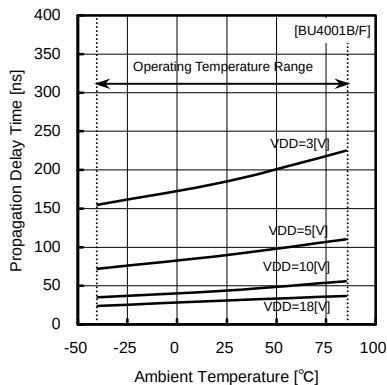


Fig.8  
Rising propagation delay tPLH

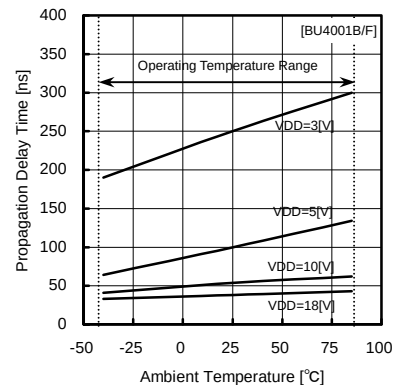


Fig.9  
Falling propagation delay tPHL

●Electrical Characteristics Curves(BU4011B)

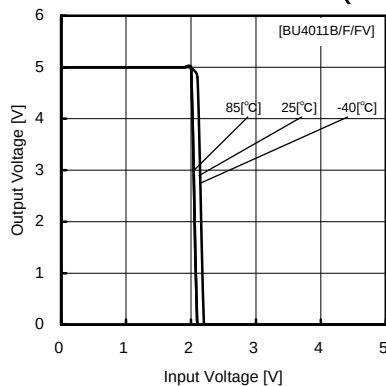


Fig.10  
Output voltage—Input voltage characteristics  
(VDD=5[V] / VSS=0[V])

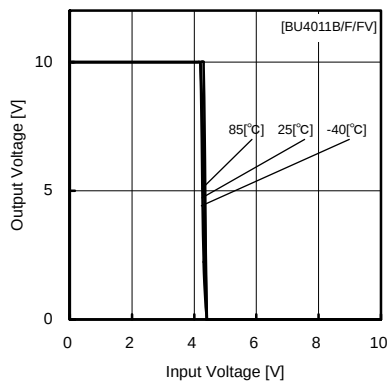


Fig.11  
Output voltage—Input voltage characteristics  
(VDD=10[V] / VSS=0[V])

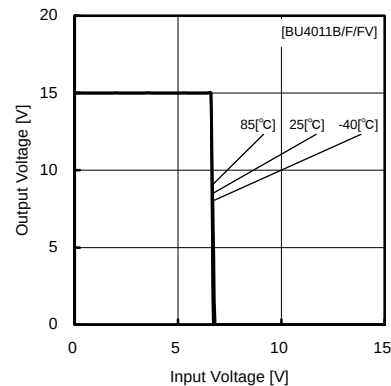


Fig.12  
Output voltage—Input voltage characteristics  
(VDD=15[V] / VSS=0[V])

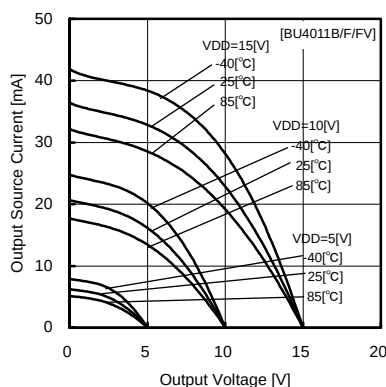


Fig.13  
Output source current—voltage characteristics

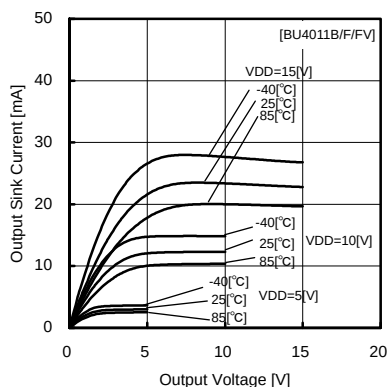


Fig.14  
Output sink current—voltage characteristics

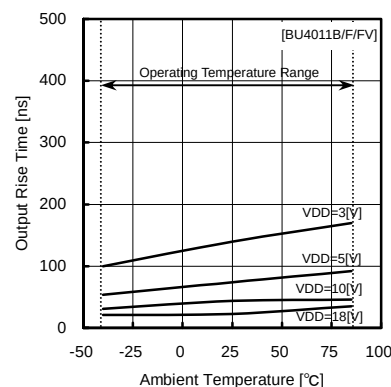


Fig.15  
Rising time tTLH

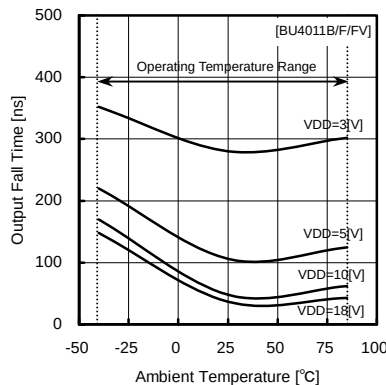


Fig.16  
Falling time tTHL

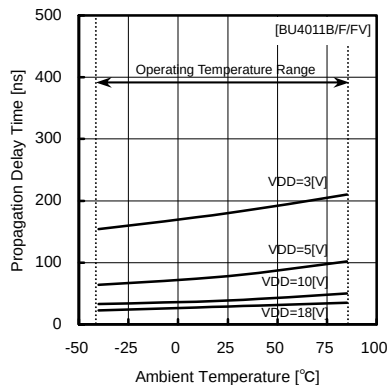


Fig.17  
Rising propagation delay tPLH

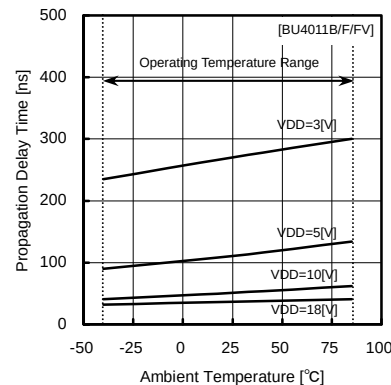


Fig.18  
Falling propagation delay tPHL

●Electrical Characteristics Curves(BU4030B / BU4070B)

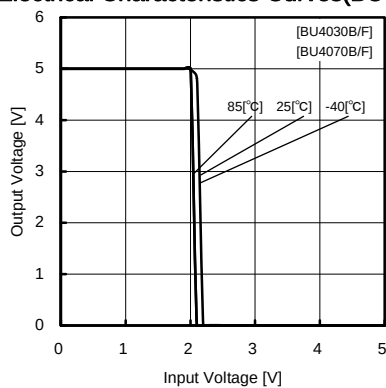


Fig.19  
Output voltage—Input voltage characteristics  
(VDD=5[V] / VSS=0[V])

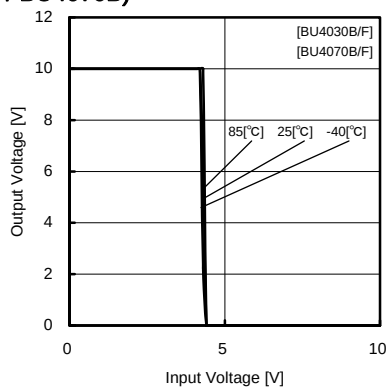


Fig.20  
Output voltage—Input voltage characteristics  
(VDD=10[V] / VSS=0[V])

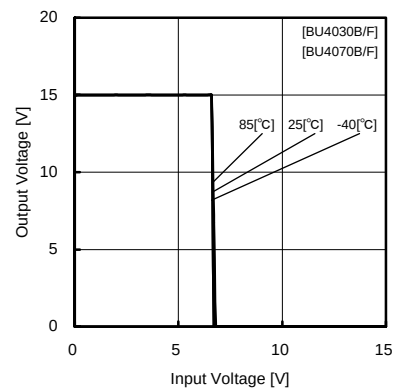


Fig.21  
Output voltage—Input voltage characteristics  
(VDD=15[V] / VSS=0[V])

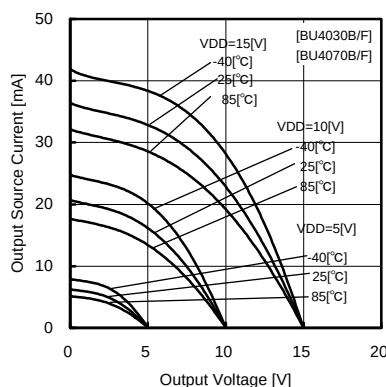


Fig.22  
Output source current—voltage characteristics

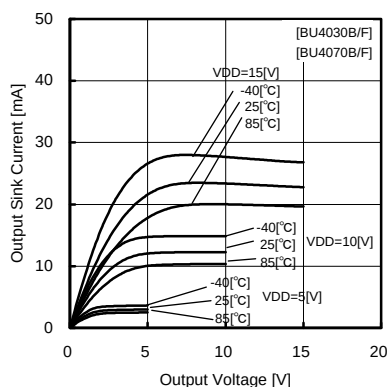


Fig.23  
Output sink current—voltage characteristics

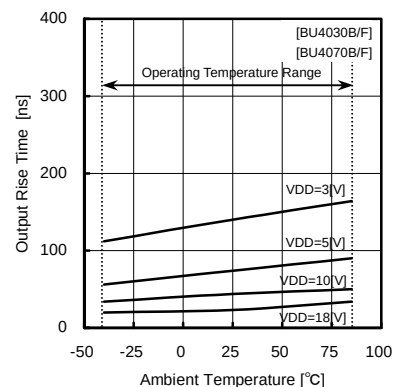


Fig.24  
Rising time tTLH

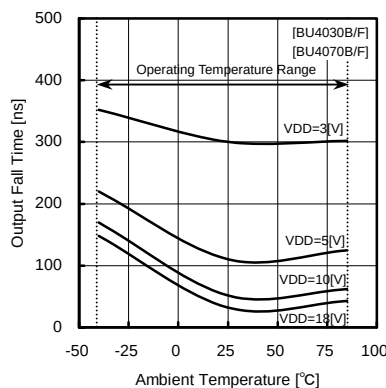


Fig.25  
Falling time tTHL

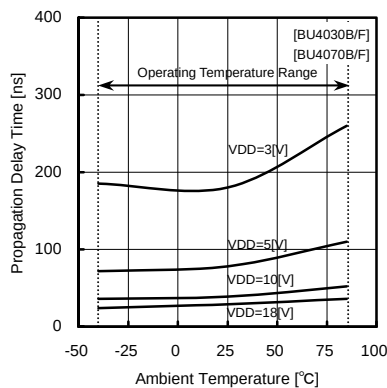


Fig.26  
Rising propagation delay tPLH

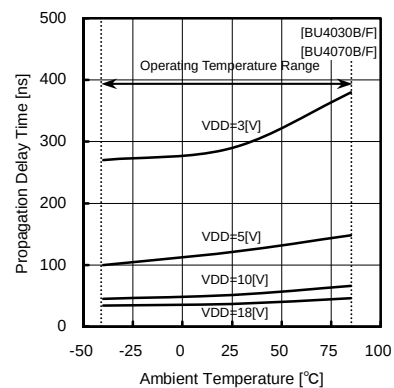


Fig.27  
Falling propagation delay tPHL

●Electrical Characteristics Curves(BU4081B)

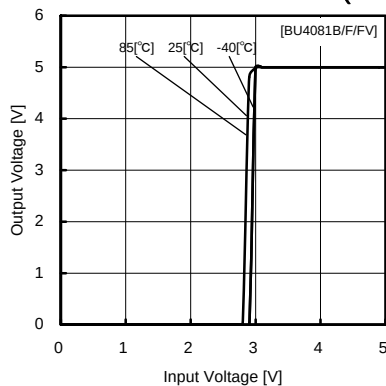


Fig.28  
Output voltage—Input voltage characteristics  
(VDD=5[V] / VSS=0[V])

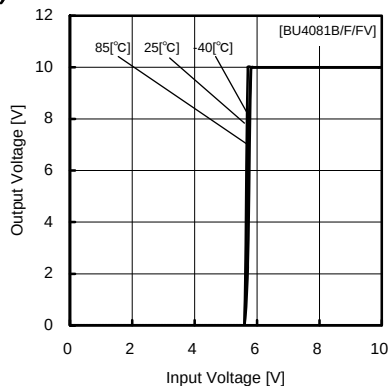


Fig.29  
Output voltage—Input voltage characteristics  
(VDD=10[V] / VSS=0[V])

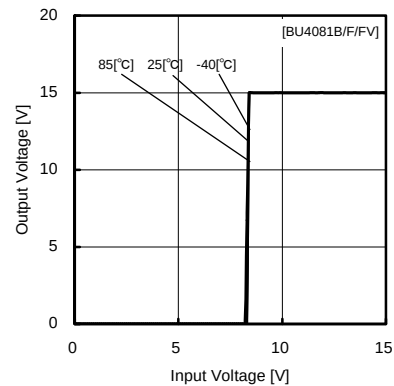


Fig.30  
Output voltage—Input voltage characteristics  
(VDD=15[V] / VSS=0[V])

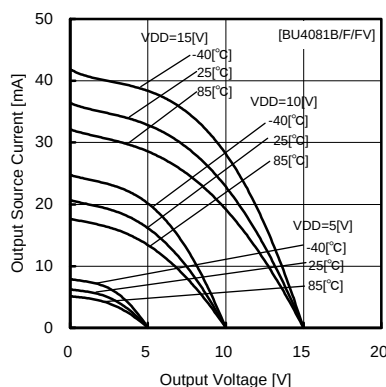


Fig.31  
Output source current—voltage characteristics

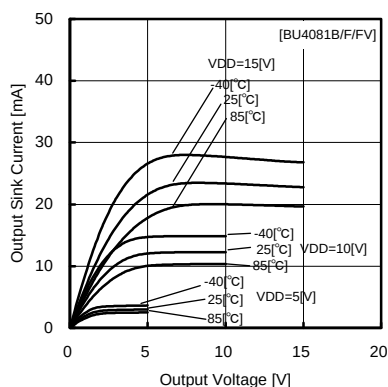


Fig.32  
Output sink current—voltage characteristics

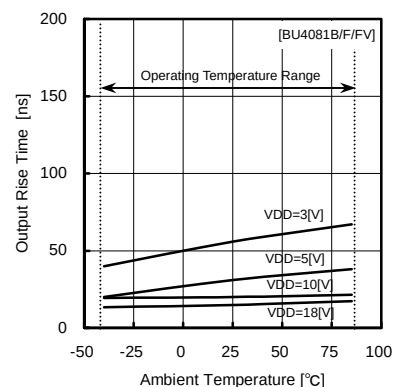


Fig.33  
Rising time tTLH

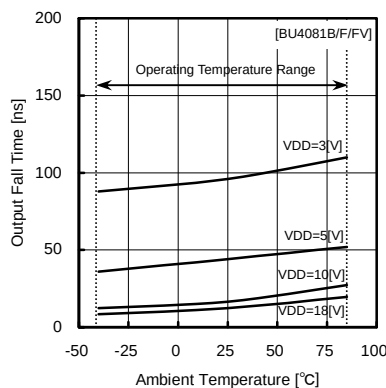


Fig.34  
Falling time tTHL

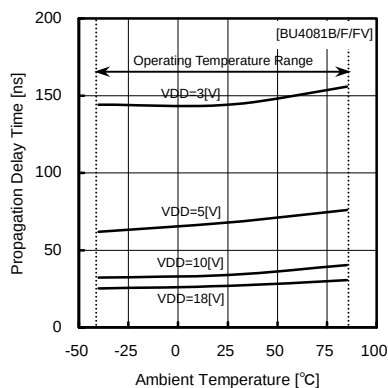


Fig.35  
Rising propagation delay tPLH

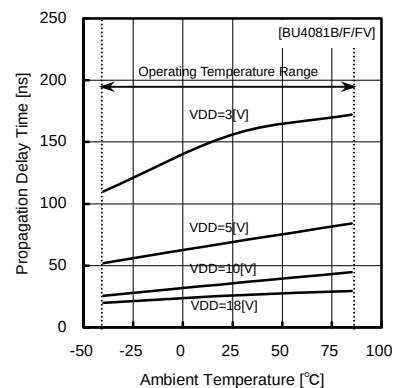


Fig.36  
Falling propagation delay tPHL

●Electrical Characteristics Curves(BU4093B)

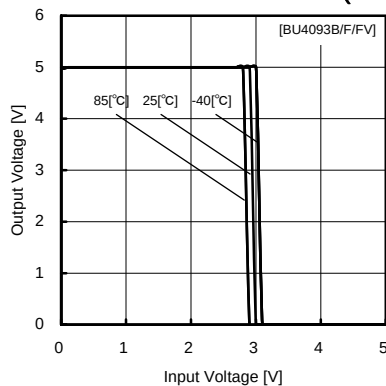


Fig.37  
Output voltage—Input voltage characteristics  
(VDD=5[V] / VSS=0[V])

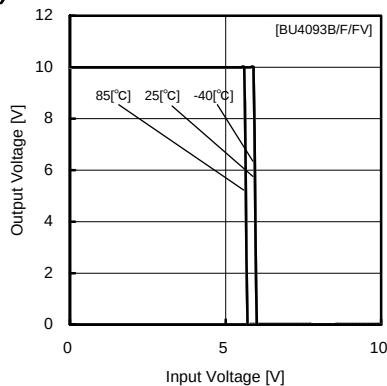


Fig.38  
Output voltage—Input voltage characteristics  
(VDD=10[V] / VSS=0[V])

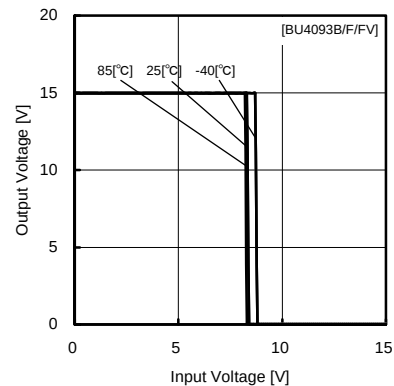


Fig.39  
Output voltage—Input voltage characteristics  
(VDD=15[V] / VSS=0[V])

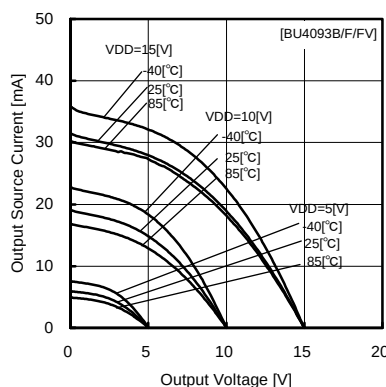


Fig.40  
Output source current—voltage characteristics

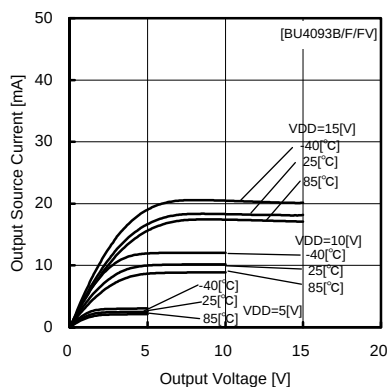


Fig.41  
Output sink current—voltage characteristics

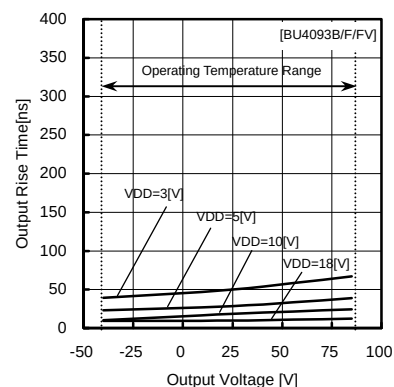


Fig.42  
Rising time tRLH

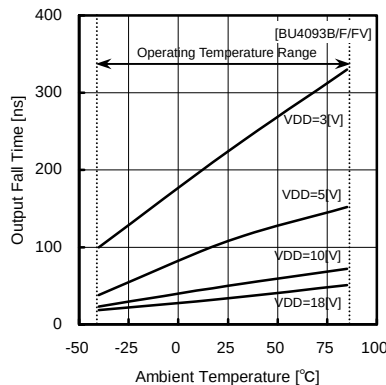


Fig.43  
Falling time tFHL

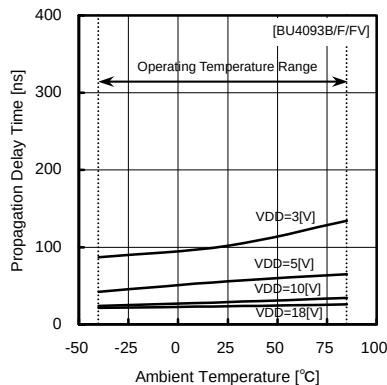


Fig.44  
Rising propagation delay tPLH

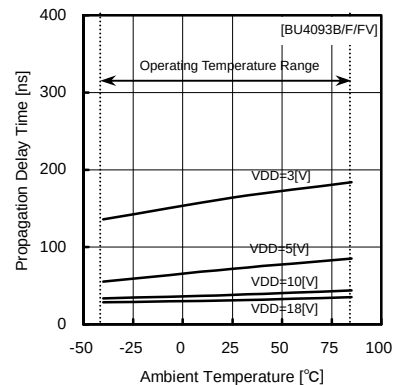


Fig.45  
Falling propagation delay tPHL

●Electrical Characteristics Curves(BU4069UB)

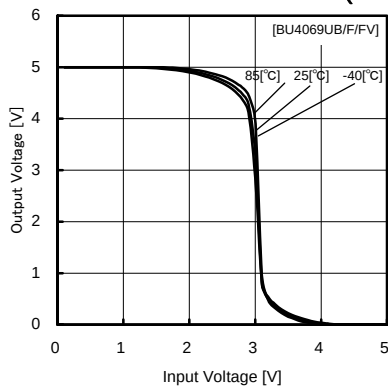


Fig.46  
Output voltage—Input voltage characteristics  
(VDD=5[V] / VSS=0[V])

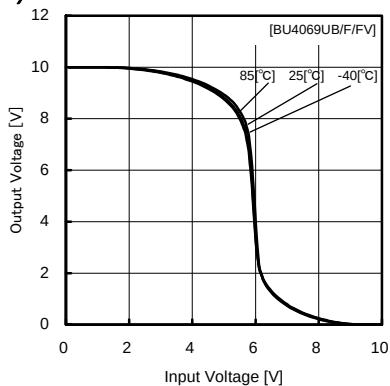


Fig.47  
Output voltage—Input voltage characteristics  
(VDD=10[V] / VSS=0[V])

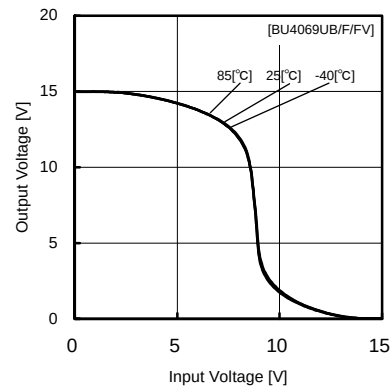


Fig.48  
Output voltage—Input voltage characteristics  
(VDD=15[V] / VSS=0[V])

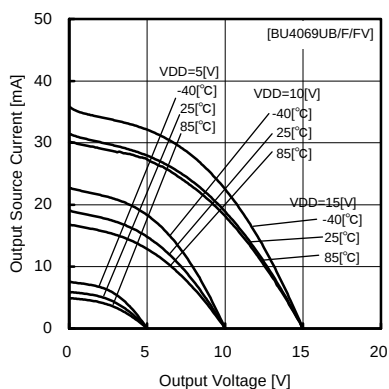


Fig.49  
Output source current—voltage characteristics

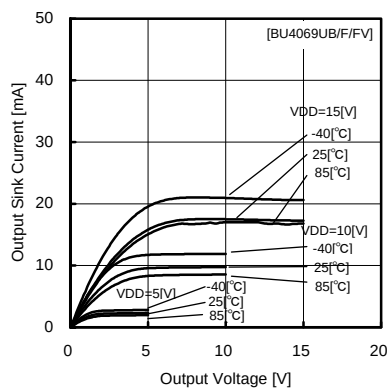


Fig.50  
Output sink current—voltage characteristics

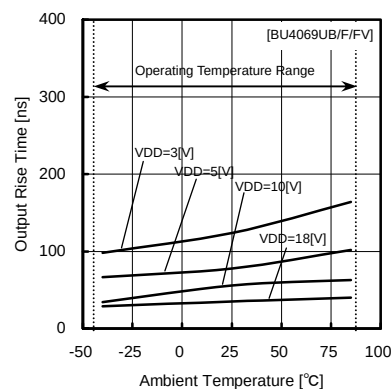


Fig.51  
Rising time tRLH

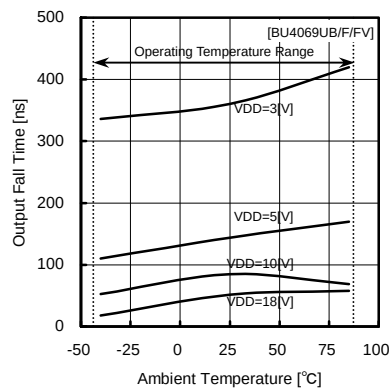


Fig.52  
Falling time tFTH

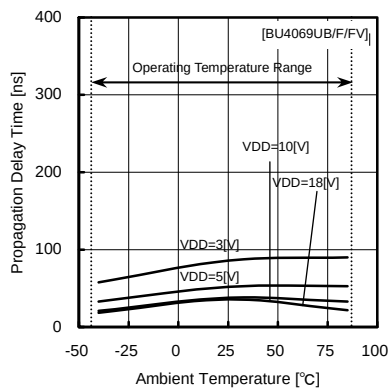


Fig.53  
Rising propagation delay tPLH

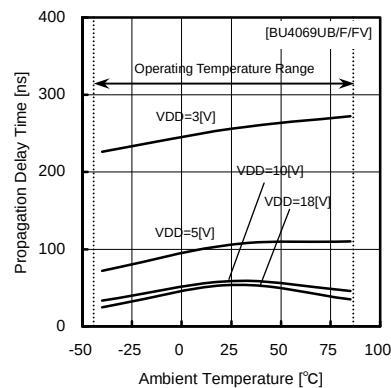


Fig.54  
Falling propagation delay tPHL



●Electrical Characteristics Curves(BU4584B)

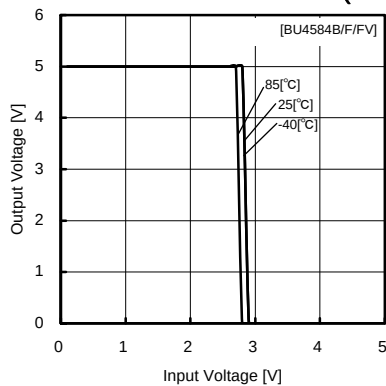


Fig.55  
Output voltage—Input voltage characteristics  
(VDD=5[V] / VSS=0[V])

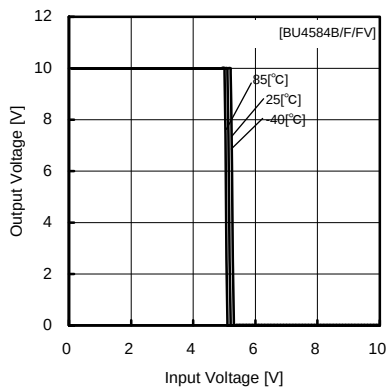


Fig.56  
Output voltage—Input voltage characteristics  
(VDD=10[V] / VSS=0[V])

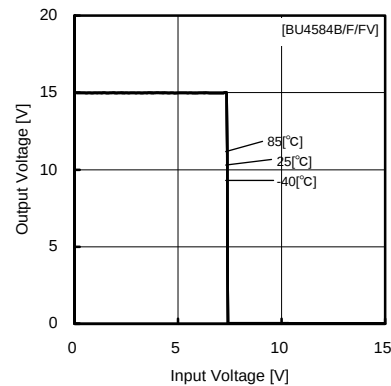


Fig.57  
Output voltage—Input voltage characteristics  
(VDD=15[V] / VSS=0[V])

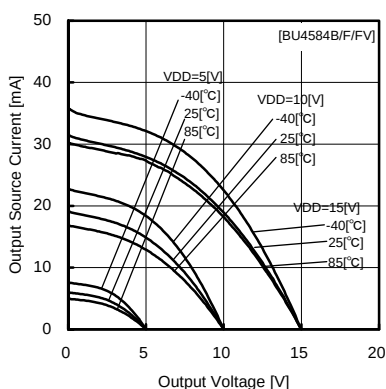


Fig.58  
Output source current—voltage characteristics

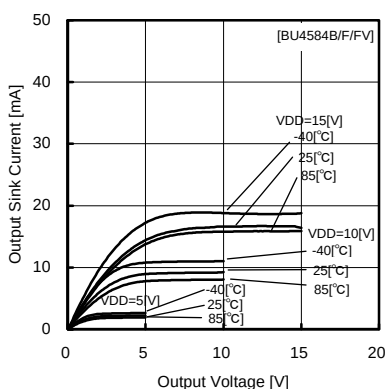


Fig.59  
Output sink current—voltage characteristics

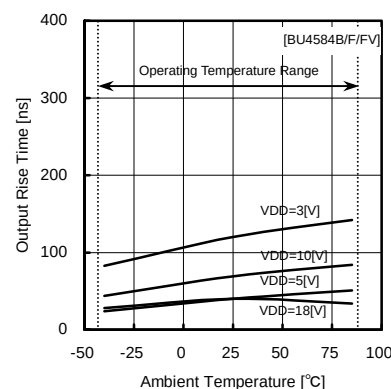


Fig.60  
Rising time tTLH

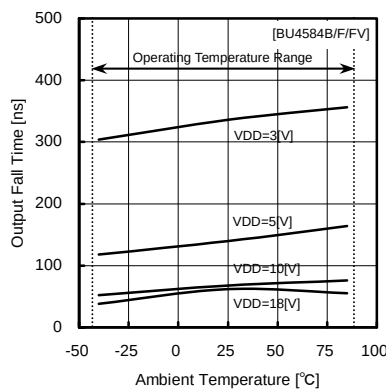


Fig.61  
Falling time tTHL

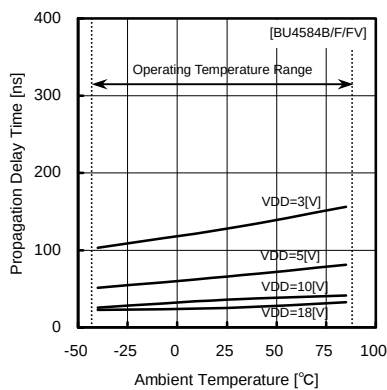


Fig.62  
Rising propagation delay tPLH

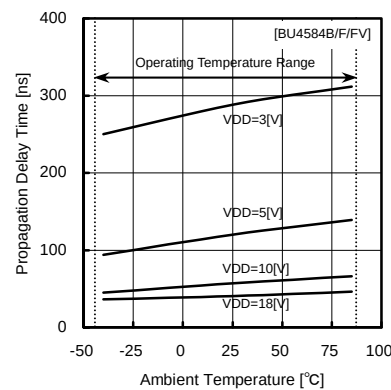
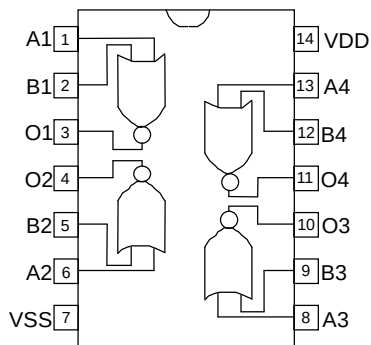


Fig.63  
Falling propagation delay tPHL

# Pinout Diagrams • Pin Description

## 1) BU4001B Series

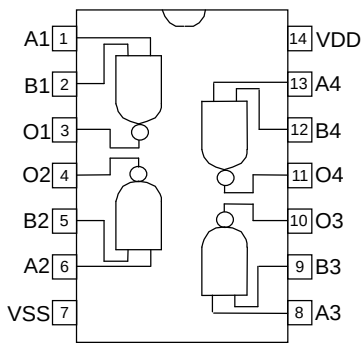


| PIN No. | PIN NAME | I/O | PIN FUNCTION    |
|---------|----------|-----|-----------------|
| 1       | A1       | I   | INPUT1          |
| 2       | B1       | I   | INPUT1          |
| 3       | O1       | O   | OUTPUT1         |
| 4       | O2       | O   | OUTPUT2         |
| 5       | B2       | I   | INPUT2          |
| 6       | A2       | I   | INPUT2          |
| 7       | VSS      | —   | Power Supply(-) |
| 8       | A3       | I   | INPUT3          |
| 9       | B3       | I   | INPUT3          |
| 10      | O3       | O   | OUTPUT3         |
| 11      | O4       | O   | OUTPUT4         |
| 12      | B4       | I   | INPUT4          |
| 13      | A4       | I   | INPUT4          |
| 14      | VDD      | —   | Power Supply(+) |

### TRUTH TABLE

| A | B | OUT |
|---|---|-----|
| L | L | H   |
| L | H | L   |
| H | L | L   |
| H | H | L   |

## 2) BU4011B Series

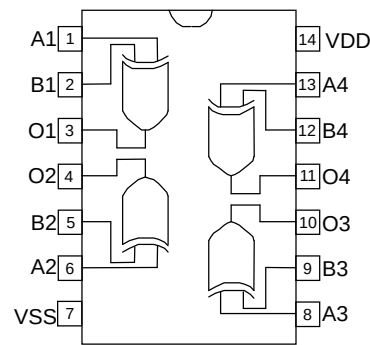


| PIN No. | PIN NAME | I/O | PIN FUNCTION    |
|---------|----------|-----|-----------------|
| 1       | A1       | I   | INPUT1          |
| 2       | B1       | I   | INPUT1          |
| 3       | O1       | O   | OUTPUT1         |
| 4       | O2       | O   | OUTPUT2         |
| 5       | B2       | I   | INPUT2          |
| 6       | A2       | I   | INPUT2          |
| 7       | VSS      | —   | Power Supply(-) |
| 8       | A3       | I   | INPUT3          |
| 9       | B3       | I   | INPUT3          |
| 10      | O3       | O   | OUTPUT3         |
| 11      | O4       | O   | OUTPUT4         |
| 12      | B4       | I   | INPUT4          |
| 13      | A4       | I   | INPUT4          |
| 14      | VDD      | —   | Power Supply(+) |

### TRUTH TABLE

| A | B | OUT |
|---|---|-----|
| L | L | H   |
| L | H | H   |
| H | L | H   |
| H | H | L   |

## 3) BU4030B Series

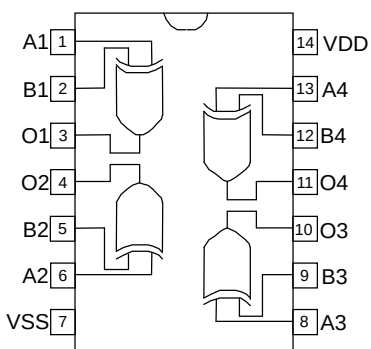


| PIN No. | PIN NAME | I/O | PIN FUNCTION    |
|---------|----------|-----|-----------------|
| 1       | A1       | I   | INPUT1          |
| 2       | B1       | I   | INPUT1          |
| 3       | O1       | O   | OUTPUT1         |
| 4       | O2       | O   | OUTPUT2         |
| 5       | B2       | I   | INPUT2          |
| 6       | A2       | I   | INPUT2          |
| 7       | VSS      | —   | Power Supply(-) |
| 8       | A3       | I   | INPUT3          |
| 9       | B3       | I   | INPUT3          |
| 10      | O3       | O   | OUTPUT3         |
| 11      | O4       | O   | OUTPUT4         |
| 12      | B4       | I   | INPUT4          |
| 13      | A4       | I   | INPUT4          |
| 14      | VDD      | —   | Power Supply(+) |

### TRUTH TABLE

| A | B | OUT |
|---|---|-----|
| L | L | L   |
| L | H | H   |
| H | L | H   |
| H | H | L   |

## 4) BU4070B Series

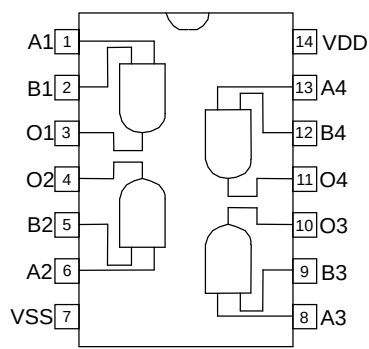


| PIN No. | PIN NAME | I/O | PIN FUNCTION    |
|---------|----------|-----|-----------------|
| 1       | A1       | I   | INPUT1          |
| 2       | B1       | I   | INPUT1          |
| 3       | O1       | O   | OUTPUT1         |
| 4       | O2       | O   | OUTPUT2         |
| 5       | B2       | I   | INPUT2          |
| 6       | A2       | I   | INPUT2          |
| 7       | VSS      | —   | Power Supply(-) |
| 8       | A3       | I   | INPUT3          |
| 9       | B3       | I   | INPUT3          |
| 10      | O3       | O   | OUTPUT3         |
| 11      | O4       | O   | OUTPUT4         |
| 12      | B4       | I   | INPUT4          |
| 13      | A4       | I   | INPUT4          |
| 14      | VDD      | —   | Power Supply(+) |

### TRUTH TABLE

| A | B | OUT |
|---|---|-----|
| L | L | L   |
| L | H | H   |
| H | L | H   |
| H | H | L   |

## 5) BU4081B Series

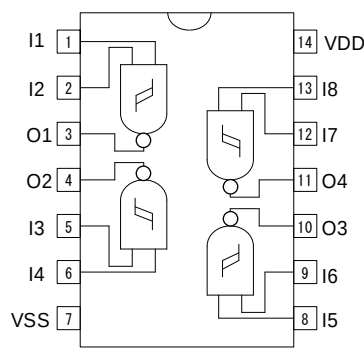


| PIN No. | PIN NAME | I/O | PIN FUNCTION    |
|---------|----------|-----|-----------------|
| 1       | A1       | I   | INPUT1          |
| 2       | B1       | I   | INPUT1          |
| 3       | O1       | O   | OUTPUT1         |
| 4       | O2       | O   | OUTPUT2         |
| 5       | B2       | I   | INPUT2          |
| 6       | A2       | I   | INPUT2          |
| 7       | VSS      | —   | Power Supply(-) |
| 8       | A3       | I   | INPUT3          |
| 9       | B3       | I   | INPUT3          |
| 10      | O3       | O   | OUTPUT3         |
| 11      | O4       | O   | OUTPUT4         |
| 12      | B4       | I   | INPUT4          |
| 13      | A4       | I   | INPUT4          |
| 14      | VDD      | —   | Power Supply(+) |

### TRUTH TABLE

| A | B | OUT |
|---|---|-----|
| L | L | L   |
| L | H | L   |
| H | L | L   |
| H | H | H   |

## 6) BU4093B Series

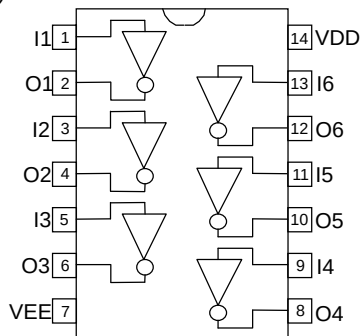


| PIN No. | PIN NAME | I/O | PIN FUNCTION    |
|---------|----------|-----|-----------------|
| 1       | I1       | I   | INPUT1          |
| 2       | I2       | I   | INPUT2          |
| 3       | O1       | O   | OUTPUT1         |
| 4       | O2       | O   | OUTPUT2         |
| 5       | I3       | I   | INPUT3          |
| 6       | I4       | I   | INPUT4          |
| 7       | VSS      | —   | Power Supply(-) |
| 8       | I5       | I   | INPUT5          |
| 9       | I6       | I   | INPUT6          |
| 10      | O3       | O   | OUTPUT3         |
| 11      | O4       | O   | OUTPUT4         |
| 12      | I7       | I   | INPUT7          |
| 13      | I8       | I   | INPUT8          |
| 14      | VDD      | —   | Power Supply(+) |

### TRUTH TABLE

| A | B | OUT |
|---|---|-----|
| L | L | H   |
| L | H | H   |
| H | L | H   |
| H | H | L   |

## 7) BU4069UB Series

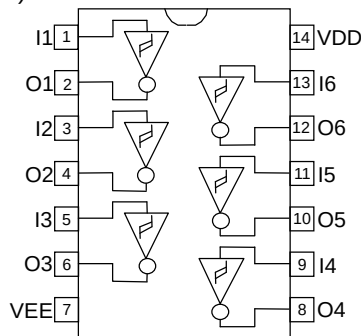


| PIN No. | PIN NAME | I/O | PIN FUNCTION    |
|---------|----------|-----|-----------------|
| 1       | I1       | I   | INPUT1          |
| 2       | O1       | O   | OUTPUT1         |
| 3       | I2       | I   | INPUT2          |
| 4       | O2       | O   | OUTPUT2         |
| 5       | I3       | I   | INPUT3          |
| 6       | O3       | O   | OUTPUT3         |
| 7       | VSS      | —   | Power Supply(-) |
| 8       | I4       | O   | OUTPUT4         |
| 9       | O4       | I   | INPUT4          |
| 10      | I5       | O   | OUTPUT5         |
| 11      | O5       | I   | INPUT5          |
| 12      | I6       | O   | OUTPUT6         |
| 13      | O6       | I   | INPUT6          |
| 14      | VDD      | —   | Power Supply(+) |

### TRUTH TABLE

| IN | OUT |
|----|-----|
| H  | L   |
| L  | H   |

## 8) BU4584B Series



| PIN No. | PIN NAME | I/O | PIN FUNCTION    |
|---------|----------|-----|-----------------|
| 1       | I1       | I   | INPUT1          |
| 2       | O1       | O   | OUTPUT1         |
| 3       | I2       | I   | INPUT2          |
| 4       | O2       | O   | OUTPUT2         |
| 5       | I3       | I   | INPUT3          |
| 6       | O3       | O   | OUTPUT3         |
| 7       | VSS      | —   | Power Supply(-) |
| 8       | I4       | O   | OUTPUT4         |
| 9       | O4       | I   | INPUT4          |
| 10      | I5       | O   | OUTPUT5         |
| 11      | O5       | I   | INPUT5          |
| 12      | I6       | O   | OUTPUT6         |
| 13      | O6       | I   | INPUT6          |
| 14      | VDD      | —   | Power Supply(+) |

### TRUTH TABLE

| IN | OUT |
|----|-----|
| H  | L   |
| L  | H   |

## ●Notes for use

### 1. Absolute maximum ratings

An excess in the absolute maximum ratings, such as supply voltage, temperature range of operating conditions, etc., can break down the devices, thus making impossible to identify breaking mode, such as a short circuit or an open circuit. If any over rated values will expect to exceed the absolute maximum ratings, consider adding circuit protection devices, such as fuses.

### 2. Connecting the power supply connector backward

Connecting of the power supply in reverse polarity can damage IC. Take precautions when connecting the power supply lines. An external direction diode can be added.

### 3. Power supply lines

Design PCB layout pattern to provide low impedance GND and supply lines. To obtain a low noise ground and supply line, separate the ground section and supply lines of the digital and analog blocks. Furthermore, for all power supply terminals to ICs, connect a capacitor between the power supply and the GND terminal. When applying electrolytic capacitors in the circuit, not that capacitance characteristic values are reduced at low temperatures.

### 4. GND voltage

The potential of GND pin must be minimum potential in all operating conditions.

### 5. Thermal design

Use a thermal design that allows for a sufficient margin in light of the power dissipation (Pd) in actual operating conditions.

### 6. Inter-pin shorts and mounting errors

Use caution when positioning the IC for mounting on printed circuit boards. The IC may be damaged if there is any connection error or if pins are shorted together.

### 7. Actions in strong electromagnetic field

Use caution when using the IC in the presence of a strong electromagnetic field as doing so may cause the IC to malfunction.

### 8. Testing on application boards

When testing the IC on an application board, connecting a capacitor to a pin with low impedance subjects the IC to stress. Always discharge capacitors after each process or step. Always turn the IC's power supply off before connecting it to or removing it from a jig or fixture during the inspection process. Ground the IC during assembly steps as an antistatic measure. Use similar precaution when transporting or storing the IC.

### 9. Ground Wiring Pattern

When using both small signal and large current GND patterns, it is recommended to isolate the two ground patterns, placing a single ground point at the ground potential of application so that the pattern wiring resistance and voltage variations caused by large currents do not cause variations in the small signal ground voltage. Be careful not to change the GND wiring pattern of any external components, either.

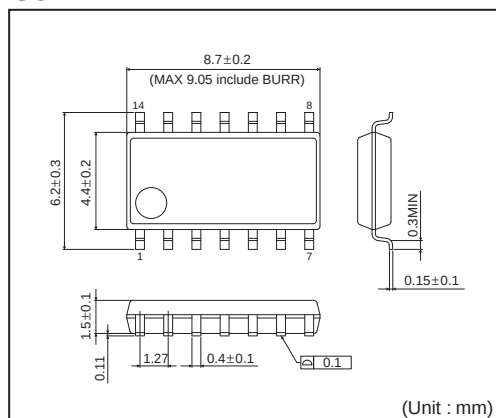
### 10. Unused input terminals

Connect all unused input terminals to VDD or VSS in order to prevent excessive current or oscillation. Insertion of a resistor (100kΩ approx.) is also recommended

● Ordering part number

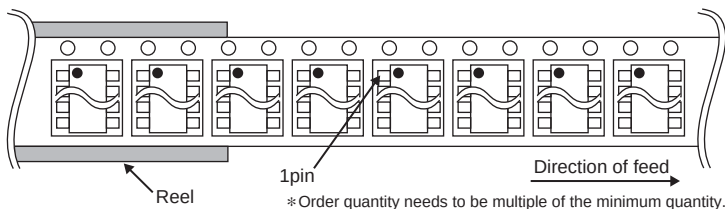
|          |                                                                                           |                                                      |                                                                                       |
|----------|-------------------------------------------------------------------------------------------|------------------------------------------------------|---------------------------------------------------------------------------------------|
| B U      | 4 0 0 1 B                                                                                 | F V                                                  | - E 2                                                                                 |
| Part No. | Part No.<br>4001B      4081B<br>4011B      4093B<br>4030B      4069UB<br>4070B      4584B | Package<br>None: DIP14<br>F : SOP14<br>FV : SSOP-B14 | Packaging and forming specification<br>E2: Embossed tape and reel<br>None: Tray, Tube |

SOP14

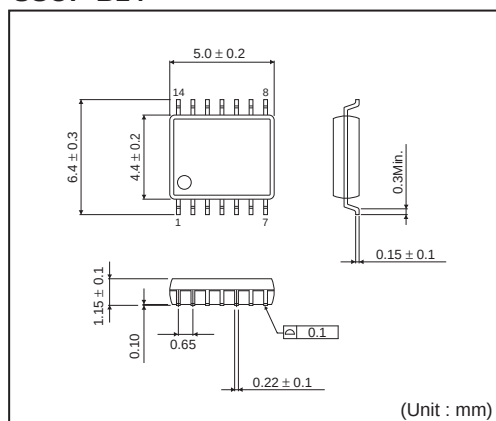


<Tape and Reel information>

|                   |                                                                                                                                                   |
|-------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|
| Tape              | Embossed carrier tape                                                                                                                             |
| Quantity          | 2500pcs                                                                                                                                           |
| Direction of feed | E2<br>(The direction is the 1pin of product is at the upper left when you hold reel on the left hand and you pull out the tape on the right hand) |

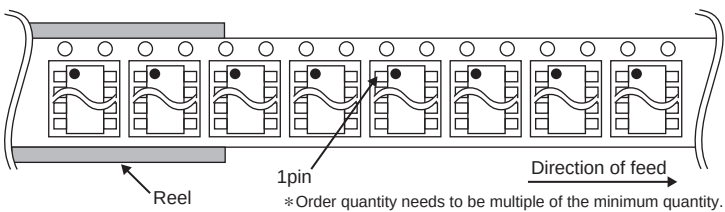


SSOP-B14

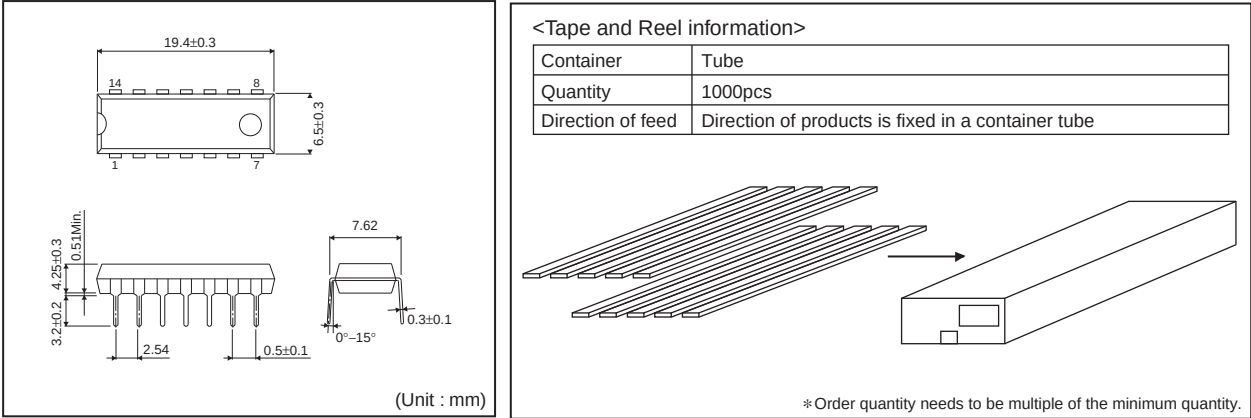


<Tape and Reel information>

|                   |                                                                                                                                                   |
|-------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|
| Tape              | Embossed carrier tape                                                                                                                             |
| Quantity          | 2500pcs                                                                                                                                           |
| Direction of feed | E2<br>(The direction is the 1pin of product is at the upper left when you hold reel on the left hand and you pull out the tape on the right hand) |



DIP14



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Please be sure to implement in your equipment using the Products safety measures to guard against the possibility of physical injury, fire or any other damage caused in the event of the failure of any Product, such as derating, redundancy, fire control and fail-safe designs. ROHM shall bear no responsibility whatsoever for your use of any Product outside of the prescribed scope or not in accordance with the instruction manual.

The Products are not designed or manufactured to be used with any equipment, device or system which requires an extremely high level of reliability the failure or malfunction of which may result in a direct threat to human life or create a risk of human injury (such as a medical instrument, transportation equipment, aerospace machinery, nuclear-reactor controller, fuel-controller or other safety device). ROHM shall bear no responsibility in any way for use of any of the Products for the above special purposes. If a Product is intended to be used for any such special purpose, please contact a ROHM sales representative before purchasing.

If you intend to export or ship overseas any Product or technology specified herein that may be controlled under the Foreign Exchange and the Foreign Trade Law, you will be required to obtain a license or permit under the Law.



Thank you for your accessing to ROHM product informations.  
More detail product informations and catalogs are available, please contact us.

## ROHM Customer Support System

<http://www.rohm.com/contact/>



Компания «ЭлектроПласт» предлагает заключение долгосрочных отношений при поставках импортных электронных компонентов на взаимовыгодных условиях!

Наши преимущества:

- Оперативные поставки широкого спектра электронных компонентов отечественного и импортного производства напрямую от производителей и с крупнейших мировых складов;
- Поставка более 17-ти миллионов наименований электронных компонентов;
- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- Лицензия ФСБ на осуществление работ с использованием сведений, составляющих государственную тайну;
- Поставка специализированных компонентов (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Aeroflex, Peregrine, Syfer, Eurofarad, Texas Instrument, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits, General Dynamics и др.);

Помимо этого, одним из направлений компании «ЭлектроПласт» является направление «Источники питания». Мы предлагаем Вам помощь Конструкторского отдела:

- Подбор оптимального решения, техническое обоснование при выборе компонента;
- Подбор аналогов;
- Консультации по применению компонента;
- Поставка образцов и прототипов;
- Техническая поддержка проекта;
- Защита от снятия компонента с производства.



#### Как с нами связаться

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